CRUISING SYSTEMS

Cubic Cruise General Instructions

1. Establish the location, treatments to be applied (see #5) and size of the area to be cruised.

2. For cruising standards, refer to section 23 of this Handbook to determine the necessary number of plots to be taken.

3. Using a tally sheet (see page 24-2 for a sample) and a suitable basal area factor gauge (average 7-10 trees/point), tally all "in" trees 1 inch DBH and larger (the dot tally is suggested, [X]=10) on each sample point by 2 inch diameter class (1.0 - 2.9, 3.0 - 4.9, etc.) and species. Keep a separate tally for each species. Minor volume species can be consolidated in the office, but it is impossible to segregate grouped species after you do the cruise.

4. Keep accurate count of the number of points sampled either by tallying the points when taken or checking off progress on your map. A dropped point will have a greater impact on accuracy, the fewer the number of points involved.

5. It is necessary to use separate tally sheets and acreage figures within a sale area when the treatment of a species or the stand changes. This system does not generate plot volumes, it is therefore essential to cruise dissimilar areas individually for volume computation.

6. When a tally sheet is filled or the cruise is completed and as soon as practical, the tally "marks" should be counted in each diameter-species cell; this number should be clearly written in the cell (preferably in a color different from that used to make the tally "marks"). This will facilitate data entry later and reduce questions as to the number of "marks" should the sheet become smudged or damaged later. The same should be done for the number of sample points taken.

7. Volumes should be computed by species by diameter class by cutting area using the appropriate spreadsheet (EXCEL).

8. Guidelines for cubic cruise standards on tree measurement (lump sum) sales:

   a. Classify the sale area into appropriate condition (density) classes.

   b. Lay out the plots in the required grid pattern.

   c. Observe the maximum grid spacing:

Area Size	<7 Cd. Eq./Acre	7-13 Cd. Eq./Acre	>13 Cd. Eq./Acre
Up to 40 acres	3 chains	3 chains	3 chains
41-65 acres	3 chains	3 chains	4 chains
66-100 acres	3 chains	4 chains	5 chains
101+ acres	3 chains	5 chains	6 chains

Sample Format For a Cubic Cruise Tally Sheet

Angle Gauge Factor	Date	Page 1 of _____
Property Name	County	Total Acres
Compartment	Town	Range	Sections	Site Index
Stand Numbers	Age	Net Acres

SPP DBH									**TOTAL**
2									
4									
6									
8									
10									
12									
14									
16									
18									
20									
22									
24									
26									

Plot Count	

Acres and dimensions of plots which are convenient fractions of an acre

Plot Area (acres)	Square Plot Side	Circular Plot Radius
1/1	208.7103	117.7522
1/2	147.5805	83.2634
1/3	120.4990	67.9843
1/4	104.3552	58.8761
1/5	93.3381	52.6604
1 /6	85.2056	48.0721
1/7	78.8851	44.5061
1/8	73.7902	41.6317
1/9	69.5701	39.2507
1/10	66.0000	37.2365
1/12	60.2495	33.9921
1/20	46.6690	26.3302
1/30	38.1051	21.4985
1/40	33.0000	18.6183
1/50	29.5161	16.6527
1/60	26.9444	15.2017
1/70	24.9457	14.0741
1/80	233345	13.1651
1/90	22.0000	12.4122
1/100	20.8710	11.7752
1/120	19.0526	10.7493
1 /250	13.2000	7.4473
1 /500	9.3338	5.2660
1/750	7.621	4.30
1/1000	6.600	3.724

The chart below can be used with the 10-Factor Bitterlich Cruising system to find total number of trees per acre represented by any 10 factor plot

Trees Per Acre Per 10 Sq. In. B.A.

DBH	Trees/Acre	DBH	Trees/Acre
6"	50.9	24"	3.2
8	28.7	26	2.7
10	18.3	28	2.3
12	12.7	30	2.0
14	9.4	32	1.8
16	7.2	34	1.6
18	5.7	36	1.4
20	4.6	38	1.3
22	3.8	40	1.1

i.e. One 6" tree tallied = 51.0 trees/acre

Slope correction factors must be considered when cruising in steep terrain

Slope Correction Factors

For Use With Sample Point

% Slope		% Slope	
15%	1.01	65%	1.19
25%	1.03	75%	1.25
35%	1.06	85%	1.31
45%	1.10	95%	1.38
55%	1.14		